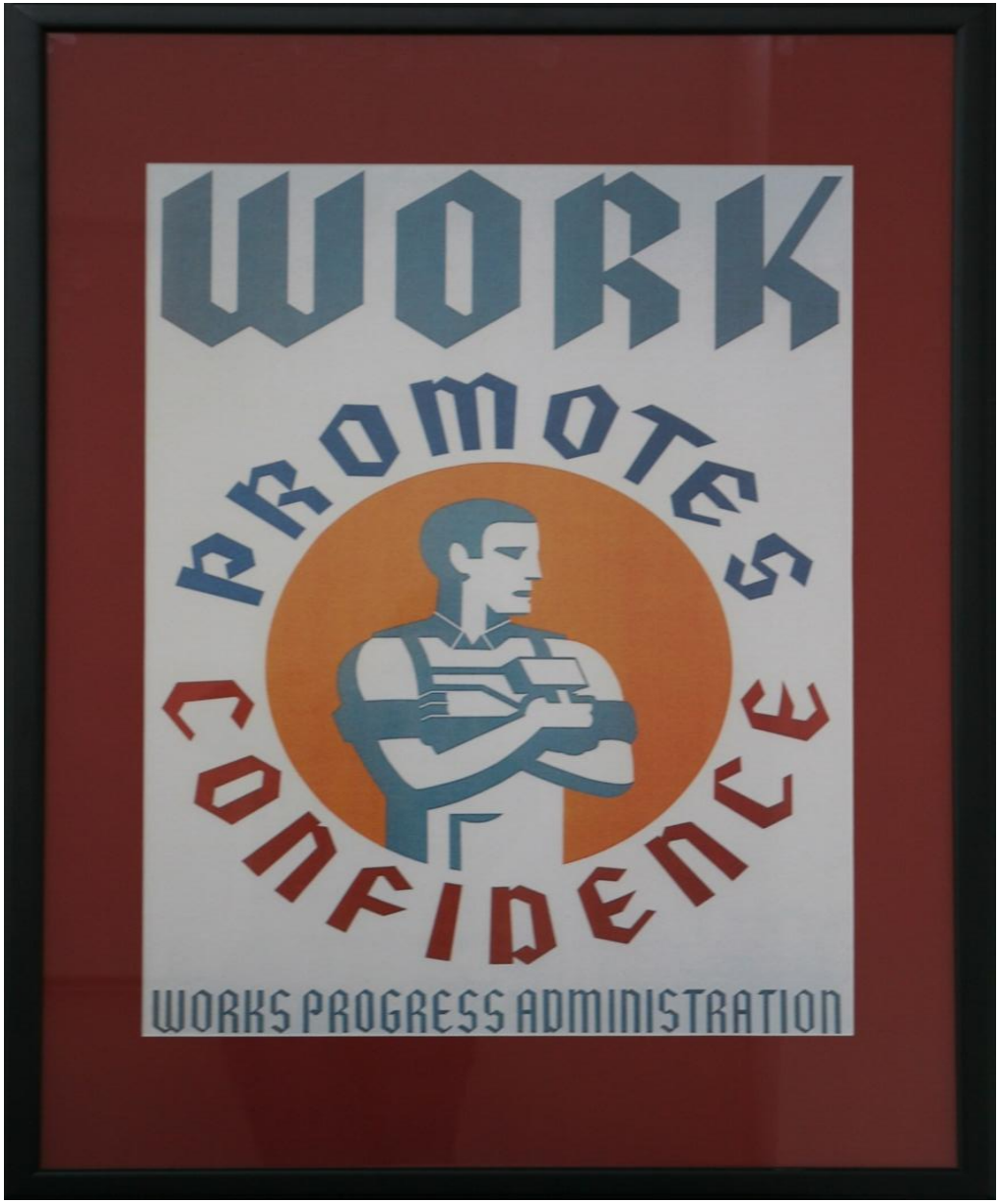

WORK
PROMOTES
CONFIDENCE
WORKS PROGRESS ADMINISTRATION

Updating MTCA Cleanup Levels

Hub of the Universe

Expectations, Status and Next Steps

Ecology Expecta-tions

- Update Method A tables using new scientific & regulatory information
  - No changes for cleanup levels for some chemicals
  - Straight-forward changes for other chemicals
  - Challenging changes for some chemicals
- Updates to general risk methods and policies are intertwined with updates to Method A tables.

Current Status

- Preliminary review of chemicals on Method A lists
- Reviewed issues surrounding cleanup levels for lead & BaP

Next Steps

1. March 22nd meeting. Results help define workgroup scope
2. Discuss issues at March 25th science panel meeting.
3. Form Vapor Intrusion/Risk Workgroup
4. Hold initial work group meeting in early April
5. Reports to MTCA/SMS group at April/May meetings
6. Ecology prepares draft Method A revisions/rule provisions.
7. Presentation/discussion at June meeting

Focus and Goals of Today's Discussion

- Describe the process we are using to evaluate whether changes to the Method A tables are needed
  - Do steps make sense?/Is something missing?
  - Do initial conclusions make sense? Did we miss something?
- Identify what issues need to be resolved in order to make decisions on Method A revisions/broader rule provisions
  - Do issues make sense?/Is something missing?

Ground Water Cleanup Levels
Basic Requirements

- Levels specified in state and federal drinking water standards if those levels do not pose cancer risks above one-in-one hundred thousand or a hazard quotient of one
- Risk-based cleanup levels for individual hazardous substances calculated using equations in rule
  - One-in-a-million cancer risk
  - Hazard quotient = 1
  - Lead
- Cross-media transfer
  - Prevent vapor intrusion problems
  - Prevent surface water/sediment problems
- Other Considerations:
  - Natural background levels
  - Practical quantitation limits

Ground Water Cleanup Levels
Risk Equation (Carcinogens)

Ground Water Cleanup Level based on Carcinogenic Risks (Equation 720-2)

$$\text{GW Cleanup Level (cancer)} = \frac{\text{Risk} * \text{ABW} * \text{AT} * \text{UCF}}{\text{CPF} * \text{DWIR} * \text{ED} * \text{INH} * \text{DWF}}$$

Risk	=	Target Cancer Risk (one-in-one million)
ABW	=	Average Body Weight (70 kg)
AT	=	Averaging Time (75 years)
UCF	=	Unit Conversion Factor (1000 ug/mg)
CPF	=	Cancer Slope Factor (kg-day/mg)
DWIR	=	Drinking Water Ingestion Rate (2 liters/day)
ED	=	Exposure Duration (30 years)
INH	=	Inhalation Correction Factor (2 for volatiles/1 for other)
DWF	=	Drinking Water Fraction (1)

Review of Groundwater Cleanup Levels

1. Reviewed EPA databases to identify chemicals with new toxicity data
2. Reviewed state and federal drinking water standards to identify new or revised maximum contaminant levels (MCLs) or maximum contaminant level goals (MCLGs)
3. Reviewed ground water vapor intrusion screening levels in draft Ecology guidance
4. Reviewed laboratory analytical limits
5. Evaluated how new information would impact the current Method A ground water cleanup levels

Summary of Initial Ecology Review

Summary - Method A Ground Water Levels (Table 720-1)	
No Revision to Method A Cleanup Level Needed	18 chemicals*
Straight-Forward Change to Method A Cleanup Level	1 chemical (EDB)
Challenging Potential Changes to Method A Cleanup Level	8 chemicals
TPH Levels for 5 Petroleum Mixtures	Future Discussion?
* Pending further review of arsenic (background), xylenes (inhalation exposure), and early life stage issues	

Soil Cleanup Levels
Basic Requirements

- Levels specified in applicable state and federal laws and regulations if those levels do not pose cancer risks above one-in-one hundred thousand or a hazard quotient of one
- Risk-based soil cleanup levels for individual hazardous substances based on direct contact pathway calculated using equations in rule
  - One-in-a-million cancer risk
  - Hazard quotient = 1
  - Lead
- Soil cleanup levels that prevent exceedances of applicable ground water cleanup levels
- Other Considerations:
  - Natural background levels
  - Practical quantitation limits
  - Cleanup levels based on ecological protection

Review of Soil Cleanup Levels

1. Reviewed EPA databases to identify chemicals with new toxicological parameters
2. Reviewed potential revisions to ground water cleanup levels
3. Reviewed laboratory analytical limits
4. Evaluated how new information would impact the current Method A soil cleanup levels
   - Direct Contact Pathway (e.g. soil ingestion, dermal contact)
   - Soil to ground water pathway
   - Other considerations

Summary of Initial Ecology Review

Summary - Method A Soil Cleanup Levels (Table 740-1)	
No Revision to Method A Cleanup Level Needed	13 chemicals*
Straight-forward Change to Method A Cleanup Level	1 chemical
Challenging Potential Changes to Method A Cleanup Level	7 chemicals
TPH Levels for 5 Petroleum Mixtures	Future Discussion?
* Pending further review of arsenic (background), xylenes (inhalation exposure), and early life stage issues	

Issues Associated With Decisions on Updating Method A Tables

Challenging Issues	Chemicals
Definition of Carcinogen	Naphthalene, Ethylbenzene
New Scientific Information/Data Hierarchy	Chromium VI, Ethylbenzene, Lead, Naphthalene, PCE, TCE
Early Life Stage Adjustments	BaP, Vinyl chloride (others?)
Vapor Intrusion Pathway	Ethylbenzene, naphthalene, PCE, TCE, vinyl chloride
Concurrent exposure (soil)	BaP, DDT, PCBs
Inhalation Risk Guidance	Ethylbenzene, naphthalene, PCE, TCE, vinyl chloride
Background Concentrations	BaP (TCE?)

Discussion/Input/Questions

- Are there concerns about some of the cleanup levels that Ecology is not planning to revise? (Did we miss something?)
- Do you agree with the list of issues that need to be addressed when updating the Method A Tables? (Did we miss something?)
- How big of a change in a risk-based cleanup level warrants a revision to the Method A Tables?
- How should Ecology select toxicity parameters when values are not included in the IRIS database?
  - Use of the Regional Screening Tables instead of HEAST?
  - Need for additional review prior to use for MTCA/SMS decisions?
- How should Ecology deal with chemicals that are have been identified as carcinogens by other scientific groups (IARC/NTP) when those classifications are not reflected in the IRIS database?
  - Consider determinations by other authoritative scientific bodies when lack of an IRIS determination is resource driven (not scientific disagreement)
  - Need for additional review prior to use for MTCA/SMS decisions?

Toluene - Significant Change?

- Current Method A ground water cleanup = 1000 ug/L
- Risk-based cleanup level calculated using Equation 720-2 and current reference dose = 640 ug/L
  - Hazard quotient at current Method A cleanup level = 1.6
- Note: Risk calculations using default assumptions use an inhalation correction factor (INH) of 2.
  - Regional Screening Tables indicate INH value for toluene could be much lower.
  - When using chemical-specific data, 1000 ug/L corresponds to HI = 1.

Regional Screening Table

You will need the free Adobe Reader to view some of the files on this pa

Welcome to the "Regional Screening Levels for Chemical Contaminants at Superfund Sites" screening level/preliminary remediati Ridge National Laboratory (ORNL) under an Interagency Agreement as an update of the EPA Region 3 RBC Table, Region 6 HHMS risk-based screening levels, calculated using the latest toxicity values, default exposure assumptions and physical and chemical changed to reflect site-specific risks. To ensure proper use of the screening level tables and the calculator, please review the Wi Download Area links. Below is a general description of screening levels for chemical contaminants. If the calculator is used with r recommended that the inputs be clearly identified and justified by the user.

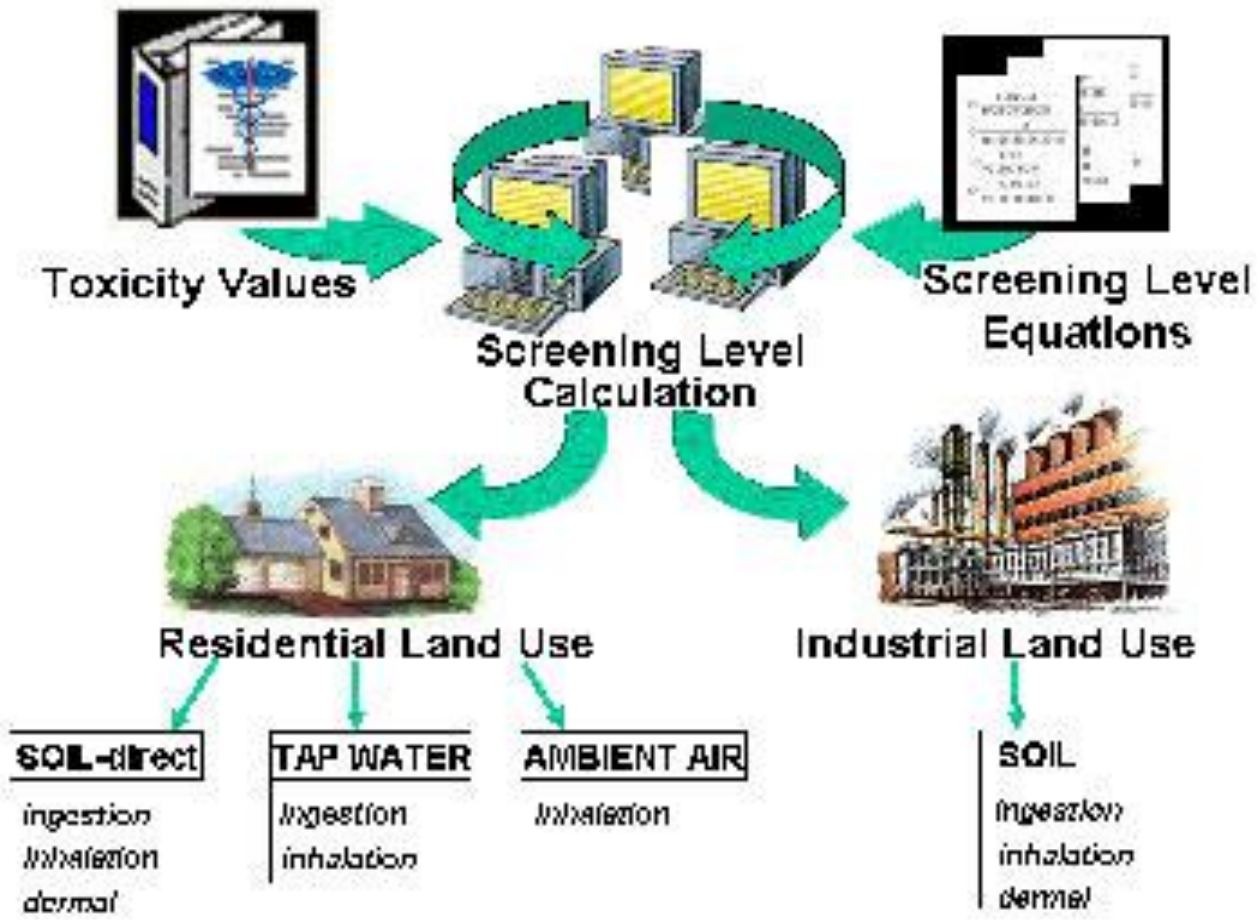
Introduction

Superfund sites are addressed under the authority of the Comprehensive Environmental Response, Compensation and Liability amended by the 1986 Superfund Amendments and Reauthorization Act. The purpose of this website is to provide a screening le assessors, remedial project managers, and others involved with risk assessment and decision-making at CERCLA sites in develo

This tool is based on Risk Assessment Guidance for Superfund: Volume I, Human Health Evaluation Manual (Part B, Development Goals) (RAGs Part B) and Soil Screening Guidance: User's Guide (PDF) (89 pp, 862K), Technical Background Document (PDF) (447 Guidance (PDF) (187 pp, 2.18 MB). RAGs Part B provides guidance on using EPA toxicity values and exposure information to calcu (SLs). The relationship of Preliminary Remediation Goals (PRGs) to screening levels (SLs) is discussed in more detail in the User's documents expand upon RAGS Part B. Initially used at the scoping phase of a project using readily available information, risk-ba modified based on site-specific data gathered during the RI/FS study. Screening level development and screening should assist of remedial alternatives. Chemical-specific SLs are from two general sources: (1) concentrations based on potential Applicable or Requirements (ARARs) and (2) concentrations based on risk assessment. ARARs include concentration limits set by other environ Drinking Water Act maximum contaminant levels (MCLs). The second source for SLs, and the focus of this database tool, is risk-b concentration limits using carcinogenic or systemic toxicity values under specific exposure conditions.

The recommended approach for developing remediation goals is to identify screening levels at scoping, modify them as needed based on site-specific information from the baseline risk assessment, and ultimately select remediation levels in the ROD.

Regional Screening Tables



Toxicological Data from Regional Screening Tables (Example)

Analyte	CAS No.	**Slope Factor (oral)** (mg/kg-day)$^{-1}$	key	Inhalation Unit Risk (ug/m^3)$^{-1}$	key	voc	muta-gen
Benzo[a]pyrene	50-32-8	7.3E+00	IRIS	1.1E-03	Cal		M
Chromium (III)	16065-83-1						
Chromium (VI)	18540-29-9	5.0E-01	NJ	8.4E-02	IRIS		M
Chromium, Total	7440-47-3						
Ethylbenzene	100-41-4	1.1E-02	Cal	2.5E-06	Cal	V	
Methylnaphthalene, 1-	90-12-0	2.9E-02	Prov			V	
Methylnaphthalene, 2-	91-57-6					V	
Naphthalene	91-20-3			3.4E-05	Cal	V	
Tetrachloroethylene	127-18-4	5.4E-01	Cal	5.9E-06	Cal	V	
Trichloroethylene	79-01-6	5.9E-03	Cal	2.0E-06	Cal	V	
Vinyl Chloride	75-01-4	7.2E-01	IRIS	4.4E-06	IRIS	V	M

Issues Associated With Decisions on Updating Method A Tables

Chemical	Challenging Issues
Benzo[a]pyrene	Early life stage adjustment/background/ concurrent exposure
Chromium (+6)	New scientific information/data hierarchy
DDT	Concurrent exposure (soil)
Ethylbenzene	Designation as carcinogen/data hierarchy/ vapor intrusion pathway/inhalation risks
Lead	New scientific information
Naphthalene	Designation as carcinogen/data hierarchy/VI pathway/ inhalation risks
PCBs	Concurrent exposure (soil)
Tetrachloroethylene	Data hierarchy/vapor pathway/inhalation risks
Trichloroethylene	Pending IRIS update/VI pathway/inhalation risks
Vinyl Chloride	Early life stage adjustment/VI pathway/inhalation risks